phenomena of interest in science can be captured in generalizations involving, for example, a functional relationship between variables, or the fact that a certain kind of event regularly occurs only if a certain other type of event has just occurred. Data play an important role in identifying and providing evidence for phenomena, but it is the phenomena so identified that are the objects of explanation.

Bogen and Woodward offered as examples of phenomena "weak neutral currents, the decay of the proton and chunking and recency effects in human memory" (1988, p. 306). In biology, DNA replication or alcoholic fermentation would be comparable examples. It is often possible to characterize phenomena quantitatively. Bogen and Woodward consider the example of lead melting at 327° C. Galileo established that the distance traveled by an object falling freely near the surface of the earth is sixteen times the square of the number of seconds it falls. A biological example of a quantitative phenomenon is that the maximum number of molecules of adenosine triphosphate (ATP) formed in normal cells via oxidative phosphorylation per oxygen molecule consumed is three. Phenomena may also be characterized with different degrees of specificity. An individual scientist might, for example, identify the phenomenon for her investigation as the synthesis of a particular protein in a specific type of cell occurring in a particular species living under specified conditions. The author of a review paper might address the phenomenon of synthesis of that protein in a variety of cell types and species. At the most general level, a textbook author might write a few pages simply on "protein synthesis."

Identifying and characterizing phenomena is a challenging scientific activity that consumes considerable resources of time, money, and ingenuity. A purported phenomenon must be shown to be genuine and its generality determined. Some purported phenomena do not stand up under scrutiny and must be discarded. Although I will emphasize the importance of a specification of the phenomenon for the development of mechanistic explanations, it is important to note at the outset that scientists often revise their characterizations of phenomena in the course of investigating the mechanisms they take to be responsible for them. In *Discovering Complexity*, Richardson and I referred to such revisions as *reconstituting the phenomenon* and we offered the example that, in the course of investigating the mechanism of gene expression, researchers repeatedly revised the conception of what genes code for. In the 1860s Gregor Mendel spoke of factors for traits. In the 1910s Thomas Hunt Morgan and his collaborators sought to localize genes for such traits as eye color, but in the 1940s Beadle and Tatum's inquiry with mutations in *Neurospora* led them to link genes instead to individual enzymes.